

UNIVERSITI TEKNOLOGI MARA

**Drug Utilization Review Among Geriatric Patients At
Primary Care Setting**

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AUTHOR'S DECLARATION

I declare that the work in the dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This dissertation has not been submitted to any other academic institution or non-academic institution for any degree of qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA (UiTM), regulating the conduct of my study and research.


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ABSTRACT

Background : Malaysia is moving towards becoming a developed country by 2020 and this process leads to the prolonged life expectancy of its citizens. Statistics 2013 projected that 7.1 percent of the population will be aged more than 65 years old by 2021. Changes in both pharmacokinetics and pharmacodynamics are more pronounced in patients exposed to multiple diseases, multiple drug consumption, polypharmacy, adverse drug reactions (ADRs), drug-drug interactions, noncompliance and potentially inappropriate medications (PIMs), which contribute to the reasons for hospitalisation. Inappropriate prescribing can be identified by using methods such as the drug utilization research (DUR) or criteria based assessment like Beers criteria. Both methods help the improvement of patient's safety and prescribing.

Objective : The objective of this study was to examine the medication prescribed to geriatric patients at the primary care setting.

Method : This was a retrospective medical records review study, conducted in three health clinics in Selangor. The utilised medications were reviewed and identified from electronic Clinic Management System (eCMS) from 1 January 2013 until 31 December 2013. Each medication was classified based on the anatomical therapeutic classification (ATC) code. Define daily dose (DDD) per 1,000 inhabitants per day calculated to provide rough estimation of geriatric population receiving standard treatment on a daily basis. Both chronic medications and short duration medications consumed within the study's period were included. Beers criteria 2012 was used to evaluate the inappropriateness of utilised medication.

Result : 500 patients were eligible for the final analysis. The eCMS database showed that 2843 medications were prescribed to elderly patients attending the health clinics in Klang district from January 2013 until December 2013. 55.8% of the patients were female with mean age of 68.27 ± 6.31 . Most of the patients were Chinese (45.8%), followed by Malay (27.2%) and Indian (26.0%) (p value ≤ 0.001). The mean for overall morbidities was 2.36 ± 6.31 (p value ≤ 0.001) with 41.6% of the patients have at least 3 morbidities. It was found that the 46.5% of the top most utilised class of medications was from the Cardiovascular system, and the top five most utilised

medications (DDD) were amlodipine (2.553) followed by lovastatin (0.759), metformin (1.077), perindopril (1.674) and atenolol (0.849). The application of Beers criteria was able to identify 448 (15.76%). 52.6% or 263 patients were prescribed PIMs. Half of the patients were prescribed with at least one PIMs (52.85%). The medications contributed the highest overall percentage were chlorpheniramine, glibenclamide and diphenhydramine, 17.19%, 15.18% and 10.49% respectively. From the multiple logistic regression, it was found that patients with lower number of morbidities have decreased odds of by 34.4% prescribed with PIMs when measured by Beers criteria. Furthermore, patients with higher number of medications have 1.3 times increased in odds of being prescribed PIMs compared to patients with less number of medication as measured by Beers criteria. Age, gender and race were not significant predictors for PIM in this study.

Conclusion : 52.6% of the total geriatric patients in primary care clinics were exposed to potentially inappropriate medications such as chlorpheniramine, glibenclamide and diphenhydramine. Geriatric patients on higher number of medications and morbidities increased the risk of being prescribed with PIMs. This is a serious scenario and pharmacist in primary care clinics have an important role to help reduce the risk of potential inappropriate medication prescribing by reviewing medications based on established criteria.

Keywords : Drug utilization review, Beers criteria, geriatric patients, elderly patients, potential inappropriate medications, Define daily dose

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